DE90008197

DOE/FE-0171

Summary Proceedings

U.S. Department of Energy
Office of Fossil Energy
Washington, D.C. 20545

April 1990

Public Meetings for Views and Comments on the Conduct of the 1990 Clean Coal Technology Solicitation

San Francisco, California, February 13, 1990
Boston, Massachusetts, March 1, 1990

Public Meetings for Views and Comments
on the Conduct of the
1990 Clean Coal Technology Solicitation

CONTENTS

CONTENTS

- **March 19, 1986:** Following meeting with Prime Minister Mulroney, President Reagan endorses Special Envoys' Report but defers request for additional funds until DOE finishes Round #1 competition.

- **July 25, 1986:** DOE picks nine Round #1 projects from 51 proposals. Negotiations begin on cooperative agreements.

1987

- **March 18, 1987:** Following expression of Canadian concerns that U.S. is acting too slowly to implement Special Envoys' recommendations, President Reagan calls on Congress to appropriate full funding for $2.5 billion federal share of Clean Coal Program over five years (1988-92). Administration determines that some Round #1 projects (with a federal share of $150 million) meet Special Envoys' criteria and should be credited as part of President's expanded Clean Coal initiative.

- **March 20, 1987:** DOE completes negotiations for first two Round #1 projects and signs agreements.

- **September 30, 1987:** After completing negotiations with two more Round #1 projects earlier in the summer, DOE sets September 30 as deadline to complete negotiations with five remaining projects. By October 6, DOE completes talks with three more projects and announces that the final two have withdrawn. DOE selects four alternate projects to replace the two withdrawn.

- **December 22, 1987:** Congress passes appropriations bill providing $575 million for DOE to conduct Round #2.

1988

- **February 22, 1988:** DOE issues call for Round #2 proposals, this time fashioning competition to adhere as fully as practicable to Special Envoys' criteria.

- **September 27, 1988:** President signs FY89 appropriation bill providing funds to complete Round #2 and advance appropriations (of $575 million) for Round #3.

- **September 28, 1988:** Secretary Herrington announces selection of 16 Round #2 Clean Coal Projects valued at more than $1.3 billion (federal share: $537 million). Negotiations begin.

- **December 9, 1988:** After completing negotiations with two of four alternate Round #1 projects earlier, DOE announces that it must terminate negotiations with one of alternates. To replace the terminated project, DOE selects three more replacement projects from Round #1 alternate list. This brings total Round #1 projects to 13, nine of which have been negotiated.

1989

- **January 9, 1989:** President Reagan's FY 1990 budget proposes to stretch out Special Envoys' 5-year timetable from 1992 to 1995 (for project selection) and to 1997 (for completion of $2.5 billion funding).

- **February 9, 1989:** President Bush revises FY 1990 budget request to reinstate 5-year schedule recommended by Special Envoys.

- **May 1, 1989:** DOE issues call for Round #3 proposals (following 3 public meetings in January and February).

- **August 29, 1989:** DOE receives 48 proposals, with total project value in excess of $4 billion. Twenty states are represented in the proposal list.

- **October 6, 1989:** DOE completes negotiations with Bethlehem Steel, first Round #2 project to receive government approval.

- **November 3, 1989:** DOE files "Programmatic Environmental Impact Statement" with EPA. Completion of the document, required by NEPA, clears the way for Round #3 selections.

- **November 9, 1989:** Secretary Watkins tells National Coal Council that he will accelerate pace of approvals for Clean Coal Technology projects.

- **November 17, 1989:** DOE sends five more Round #2 project reports to Congress, signifying completion of negotiations.

- **December 15, 1989:** Secretary Watkins signs directive implementing accelerated review process.

- **December 20, 1989:** DOE announces 13 new projects as choices in Round #3 competition.

1.3 THE SEB

The primary recipient of the views, comments, and recommendations that ensued from the public meetings will be the CCT-IV Source Evaluation Board (SEB). The SEB constitutes a select group of government professionals whose role is to solicit and evaluate the proposals. Specifically, the functions of the SEB are to:

- Determine the most appropriate method of selecting and applying the qualification and evaluation criteria and techniques that will best assist the Source Selection Official to decide upon the successful offerors with which negotiations will be initiated.

- Use its best judgement in such application.

- Report fully on its work and the results thereof to the Source Selection Official.

In carrying out these functions, the SEB is responsible for the impartial and equitable evaluation of all prospective contractors' proposals and for the findings or recommendations it presents to the Source Selection Official. Board evaluations and conclusions will be based on analyses of proposals and other information affecting a potential contractor's standing and on reviews of committee evaluations.

1.4 MEETING PLANNING AND FORMAT

The public meetings were formally announced in the *Federal Register* of January 16, 1990, under the heading, "Invitation for Public Views and Comments on the Conduct of the 1990 Clean Coal Technology Solicitation; Meetings." The notice reviewed the purpose of the meetings, provided a proposed outline of the anticipated solicitation, and identified "a number of specific issues and concerns that DOE is particularly interested in receiving public comments on":

1. Reconciling Foreign Participation with U.S. Interests.

2. Recoupment of the Government's Cost Share.

3. Intellectual Property Rights.

4. Carbon Dioxide Emissions and Global Warming.

Additional publicity was obtained by the issuance of a DOE News Release on January 9, 1990, and by a mass mailing of the notice to over 5,000 addresses of individuals who had previously responded to DOE solicitations or notices, or who had expressed an interest in being kept informed of CCT activities.

Pertinent information of possible use or interest to meeting attendees was compiled into a *Background Information* document (DOE/FE-0157), which was distributed at each public meeting, or provided upon request by mail or telephone. The report is a compendium of recent information related to the CCT Program; including news releases, speeches, history, evaluation/selection/implementation information, and appropriations language.

As was described in the *Federal Register* notice, each meeting commenced with a brief plenary session, which included introductory remarks and program overviews by DOE officials. The audience then briefly recessed and reconvened into concurrent Discussion Workshops led by

DOE officials. All of the working groups discussed essentially the same issues; the number of groups varied in each city in response to the attendance. In Boston, there were four working sessions, while in San Francisco, three working sessions were adequate. Finally, attendees met in a closing plenary session in each city. The highlights and recommendations of each of the working groups were reviewed and summarized, and the meetings were concluded. The opening and closing plenary sessions were transcribed. However, there was no transcription of the working sessions; each group cochairman was responsible for preparing notes of the salient aspects of the proceedings. These working group summaries are provided in Chapter 4 of this report.

CHAPTER 2

SUMMARY ISSUES AND SUGGESTIONS

2.1 INTRODUCTION

As was noted in Section 1.4, the meetings notice published in the *Federal Register* listed four issues and concerns of particular interest to DOE. Additional subjects were identified as noteworthy for discussion by the public at the meetings. This chapter provides capsule statements of the issues that were raised and representative excerpts of the public's suggestions regarding these issues.

It is important to note, however, that this report reflects the views, opinions, and comments expressed by the public, and that inclusion here does not in any way reflect DOE's agreement with these statements. However, DOE will fully consider and assess the merits of all feedback, oral and written, received from the public prior to issuance of the CCT-IV Solicitation.

Preceding Page Blank

2.2 GLOBAL WARMING AND CO2

Comments and Suggestions

Rather than directly addressing CO2 emissions, DOE should simply emphasize improved energy efficiency.

DOE could give extra credit to processes which reduce greenhouse gas emissions, and penalize processes which would increase them.

The proper place for Governmental support in this area is R&D, not a demonstration program.

Technologies that generate extra CO2 (scrubbers) should not be penalized.

Technologies that result in CO2 capture or CO2 utilization should not be given extra credit.

Technologies that reduce CO2 generation at the cost of lowered efficiency should not be given extra credit.

The DOE FE estimate, that U.S. coal-fired power generation contributes only 3% of the greenhouse gases, is believed to be much too low by 5-6 times.

No Congressional mandate exists for the Clean Coal Technology Program to reduce greenhouse gases. Public Law 101-121, which authorizes the CCT-IV program, does not mention greenhouse gases.

Technologies being proposed for demonstration were not designed to address the problem of greenhouse gas emissions, and it is improper so late in the development cycle to create an important additional criterion by which they are judged.

A problem exists in evaluating CO2 emissions related to projects which produce a clean fuel or alternate fuel form, since specific end uses will impact such emissions.

2.3 FOREIGN PARTICIPATION

Comments and Suggestions

Limitations would be counterproductive to the objective of cleaning the environment and could easily backfire on the U.S. Let the free market system work and may the best technologies win.

Provide repayment incentives only to Clean Coal projects which pledge to use U.S. goods and manufacturing assembly to the greatest practical extent.

The goal of the program is to encourage the use of U.S. coals in an environmentally superior manner by bringing the best technology in the world to the U.S. for demonstration. Any restriction on foreign involvement would impede that goal.

Restricting foreign participation would limit foreign capital that would otherwise be available to develop exports of U.S. coal.

Restricting foreign participation is seen as protectionist. It could restrict technologies available to utilities and other users to "second best" on a worldwide basis.

DOE should not try to define "foreign company." Rather DOE should focus on the added value to the U.S. that would result from any proposed project.

DOE should not attempt to control foreign participation through the mechanism of restricting the use of its waived patents.

The use of a comprehensive evaluation factor, that considers benefits to the U.S., offers the best way to define exactly what would be evaluated and what its importance would be in the overall evaluation of the proposal. This factor should be classified under the Business and Management criteria in order to separate it from technical considerations.

2.4 REPAYMENT

Comments and Suggestions

Repayment adversely affects both the number and quality of proposals in CCT solicitations. It complicates the negotiation process leading to a Cooperative Agreement and contributes to long pre-award periods.

It is improper for DOE to seek repayment from hardware suppliers and equipment vendors. This group benefits less than the owner of the demonstration facility from the Government's financial participation.

The government should share the financial risk of a demonstration and subsequent benefits without expecting repayment; in lieu of that, make it easy to forgive the "loan" in whole or in part.

Negotiate repayment after signing the cooperative agreement. This would quicken the pace of negotiations while permitting more rapid development of the projects and providing the contractors more time for market investigations.

Delay repayment obligations until a project is in a profit making position. DOE could receive a percentage of operating revenues after the installation is up, running, and generating a positive cash flow.

DOE should not be able to recover more than its investment in a project, should the technology become very successful. Attempts to place the Government in a profit-making, industrial business partner role are totally inappropriate.

The concept of repayment is an acceptable one, provided that the conditions on payback are sufficiently flexible.

Repayment for utilities could be based on sales, but allow reassignment of responsibility from the utility to the technology owner.

2.5 PURPOSE/FOCUS OF CCT-IV

Comments and Suggestions

DOE needs to communicate CCT-IV purpose clearly:
(1) if DOE can predetermine technology categories and dollars per category, state it clearly in PON;
(2) if DOE can predetermine the mix of technologies, state it clearly in PON.

The principal focus of CCT-IV should continue to be SO2/NOx reductions.

Choice of retrofit, repowering, or replacement should be left to industry as economics dictate. The mix should include new fuel forms, innovative technologies, and the possibility of deployment.

DOE should maintain a balanced program that demonstrates higher cost high removal technology as well as lower cost lower removal technology.

New fuel forms made from low sulfur coals should continue to be sought as was done in PON III.

Solicit technologies that employ a mixed feed of coal and some bio-derived fuel.

The program should not be expanded to include research and development. However, DOE could cost share R&D activities that specifically support a CCT demonstration project.

The solicitation should allow diversity for achieving near-term and long-term needs. Retrofit is viewed as the technology to accomplish the near term CAA emission limits and repowering as the technology to maintain these limits in the face of increasing demand.

Drop the stipulation that demonstrated technologies must be capable of being commercialized in the 1990's. Longer term solutions are important, especially in light of probable constant emission caps
after 2003.

2.6 PON SCHEDULE/METHODOLOGY

Comments and Suggestions

DOE should not delay issuance of the PON for CCT IV, pending the passage of new Clean Air legislation.

DOE should base its PON largely upon President Bush's Clean Air proposal, and also provide for flexibility -- possibly via a program policy factor which would allow for adjustment should a different law be enacted.

The reference plant concept is most meaningful for retrofit technologies. If the reference concept is to be retained, it needs to be expanded to cover the complete range of technology categories so non-retrofit technologies are not penalized.

Time constraints for PON publication, proposal preparation, and evaluation preclude alternative approaches to obtaining additional comments from proposers or from having discussions with offerors. The emphasis on moving rapidly in the CCT program is greater than emphasis on clarification. DOE should retain and use the option to request clarification from proposers.

Time constraints and the extra effort/costs involved do not justify a two-step solicitation approach.

The CCT IV solicitation should be delayed until the enactment of the Clean Air Amendments. The Phase I investment window has already been missed, and a delay will allow the Clean Air Act Amendments to shape the market.

The PON should present more realistic "Appendix I" reference cases. Sizes under 250 MWe should be used.

2.7 DEPLOYMENT/REPLICATION STRATEGY

Comments and Suggestions

On the issue of deployment/replication, DOE needs to encourage a mix of technologies and leave refinements to be done by the private sector.

PON language should explicitly encourage replication. This would make it clear that demonstrations of new technologies are not the only eligible projects.

One demonstration per technology is not enough. Additional demonstrations of the same technology must show an improvement through economics of emission reductions.

The CCT-IV solicitation should allow for the replication of a commercially available technology that has not been fully accepted by the potential market. Market acceptance may require three or four demonstration projects, possibly including projects using the same technologies but demonstrating operation with different feedstocks.

The vendor must be able to stand behind a technology with a performance guarantee. It is appropriate for DOE to cost share in demonstrations that build the data base necessary for writing performance guarantees.

While multiple deployments of the same technology may be valuable, DOE must seek to achieve a balanced mixture of newly innovative technologies and deployment-type replications.

DOE should not be coerced into accepting the same conservative standards that utilities demand. Too much duplication should not occur, especially at the expense of first-time demonstrations.

Deployment should be allowed to the extent that it fosters commercialization ... replication must add value to the Clean Coal data base.

2.8 INTELLECTUAL PROPERTY RIGHTS

Comments and Suggestions

Public release of operating data obtained from the demonstrations can be harmful as this information, when combined with patents, gives away a lot of useful data to competitors.

While repayment is occurring, DOE should assist the participant by keeping data private.

The cost for processing DOE patent waivers can be high. DOE should help keep private sector legal costs down.

Technology owners and equipment vendors will have their patent protection established before they ever start on a demonstration project, so demonstration data will not need additional protection.

Intellectual property rights are not a major issue.

2.9 AIR TOXICS, PARTICULATES, AND SOLID WASTES

Comments and Suggestions

While the Clean Coal Program is focused on acid rain precursor and greenhouse gases, it has not yet squarely addressed air toxics and particulate emissions. These two areas are worthy of extra credit during proposal evaluation.

DOE could identify the emissions from a reference plant, and let the proposer quantify the effects of his/her process upon those emissions.

Proposals should be given extra credit for the extent to which they would reduce or eliminate the production of disposable solid and/or liquid wastes.

DOE should increase the amount of credit given to turning waste into useful by-products.

DOE should put more emphasis on solid waste management. This is an area that will require demonstration of acceptable technology, and CCT-IV is an appropriate vehicle for addressing the issue.

DOE should address air toxics in its R&D program ... these technologies are not ready for demonstration.

CHAPTER 3

WELCOMING REMARKS

Preceding Page Blank

3.1 EXPLANATORY NOTE:

At the public meeting in Boston, attendees were welcomed by Mr. Robert H. Gentile, Assistant Secretary for Fossil Energy. The prepared text of his presentation is provided in Section 3.2. In San Francisco, the public was addressed by Mr. Jack S. Siegel, Deputy Assistant Secretary for Coal Technology. The messages conveyed by Mr. Siegel, although not contained in this report, were essentially similar to those presented by Mr. Gentile in Boston.

Preceding Page Blank

3.2 REMARKS BY ROBERT H. GENTILE OF MARCH 1, 1990

OPENING PLENARY SESSION
BOSTON, MASSACHUSETTS

Preceding Page Blank

Clean Coal Technology—Round #4

Boston Public Meeting

Remarks by Robert H. Gentile Assistant Secretary for Fossil Energy to the Round #4 Clean Coal Technology Public Meeting held in Boston, Massachusetts March 1, 1990

It is a pleasure to welcome you here today. This is my first opportunity to speak as the newly sworn-in Assistant Secretary for Fossil Energy. And I couldn't be more pleased that it comes at a meeting dealing with clean coal technology.

They tell me that I'm the fifth person to hold this job on a "permanent" basis—and they also tell me that "permanent," if tradition holds, means something less than two years. Well, I don't know how long it will be for me—I hope I break past tradition—but I can tell you this: whether I'm in this job for two years or two months, I'm going to speak out about coal and other fossil fuels...for two reasons.

One, because I've never been bashful about expressing an opinion, and two, because my opinion right now is that this nation is at the threshold of perhaps its most critical decade.

Given the economic growth expected here in the U.S., given the remarkable changes in eastern Europe, the emerging industrialization of many lesser developed nations, and the rising tide of environmental consciousness around the globe...the decade of the '90s will be unlike any we've ever experienced. And the changes we have in store for us will be governed, I believe, largely by the availability of adequate, affordable energy. That, in turn, will place extraordinary demands on our energy resources and on our technology.

Preceding Page Blank

In many ways, we've experienced a decade or so of energy complacency. Not that things didn't get done. A lot of the advanced technologies we're talking about here today cut their R&D teeth during the decade of the '80s. But I think many people kept hoping that some magic answer would appear and solve our energy problems overnight. The world, on the other hand, doesn't stop to wait for revolutionary energy breakthroughs. It keeps on going. And energy consumption continues to rise.

So today we see oil imports back at the 50 percent level. Before this decade is out, two out of every three barrels of the crude oil could originate from outside our borders. We see a third of our national debt going overseas to buy foreign oil, and that could rise to 50 percent during the 1990s.

In this area of the country particularly, many utility margins are just a few percentage points above the minimum levels considered safe for reliability. We see brownouts becoming more of a normal occurrence—in a country that historically has had the best, most reliable power generating and delivery system in the world.

We see nationwide electricity reserve margins dropping from 35 percent only five years ago to 25 percent today. And they continue to erode. In this area of the country particularly, many utility margins are just a few percentage points above the minimum levels considered safe for reliability. We see brownouts becoming more of a normal occurrence—in a country that historically has had the best, most reliable power generating and delivery system in the world.

The Energy Information Administration estimates that, even with substantial refurbishment of existing capacity, the U.S. will require an additional 100 gigawatts of new generating capacity by the year 2000. One hundred gigawatts—to put that in perspective in this region, that's 85 new Seabrook nuclear power stations in just 10 years. Now I think most people will agree that we aren't going to see 85 new Seabrooks built during the 1990s. So that leaves natural gas and coal.

Natural gas is a big plus for this country, and we expect to see a sharp increase in gas use by utilities. But in many regions, there are still price and deliverability questions. So that means we cannot and must not turn our back on coal. Coal must be a cornerstone of our national energy policy—we recognize that, Energy Secretary Watkins recognizes that, and I'm sure you here at this meeting recognize that.

But of course, as I mentioned, overlaying all of this, we see a steadily increasing concern about our impact on the environment. This is an altogether correct and appropriate public attitude. What is *not* correct is the belief that somehow we must choose between fossil fuels, like coal, and a quality environment—that both are inherently in conflict. That is a belief we must dispel—and I believe the technologies we are talking about today can help do that.

We have come to Boston today to talk about clean coal technology specifically because Boston is *not* "coal country." This is by design.

We've come here fully aware that only a few months ago, the state legislature was considering a bill to declare Massachusetts a "coal free" zone. We know that a similar ban was recently suggested in Rhode Island. We know that last week new legislation was filed that would establish a 5-year moratorium on new coal plants in three Massachusetts Counties. We recognize that nine months ago, the Boston Herald called coal a "plague" on mankind.

What is not correct is the belief that somehow we must choose between fossil fuels, like coal, and a quality environment—that both are inherently in conflict. That is a belief we must dispel...

But we also know that Boston resides at the center of one of the nation's great spheres of technological excellence. We also know that it has been—and remains—at the forefront of the environmental movement. And so, what better place symbolizes out purpose here today? What better place is there to discuss the melding of new technology and concern over the environment?

That's the message we have to get out about Clean Coal Technology. It offers a way for this country to meet its environmental goals while continuing to use its most abundant national energy resource. It brings out the best of our ability to apply new technology to meet changing national needs. And if offers the same benefits for our global neighbors.

One only has to look at the project proposed by Texaco, GE and Commonwealth Energy. These firms plan a coal gasification-combined cycle facility to be built in Freetown—about 50 miles south of here.

The technology they propose is one of the pioneers of this new era of environmentally superior, coal-based power generation. It will far exceed the most stringent of EPA's air quality standards. Just look at the numbers:

EPA mandates that a plant emit only six-tenths of a pound of sulfur dioxide per million BTUs of high sulfur coal. The technology proposed for Freetown emits only 76 one-thousandths of a pound—eight times less. EPA says that a coal plant can emit only six-tenths of a pound of nitrogen oxide per million BTUs. The proposed technology for Freetown emits *nine times less* than that. EPA sets a limit of three one-hundreths of a pound for particulates. The new technology releases eight *one-thousandths* of a pound.

There will be no cleaner coal plant in the world. In fact, many oil plants can't come close to its projected level of environmental performance—and it is approaching the emission characteristics of natural gas.

Massachusetts has a golden opportunity to take a step into the future of clean coal-fired power generation.

For a region needing power, this plant is critical. For a region correctly concerned about the quality of its environment, the *technology* proposed for the plant is likewise critical.

And by the way, how do we know it will perform with these numbers? Because the technology has already been demonstrated—in a five-year test run at the Cool Water plant in California. That's what I mean when I say many of the new coal technologies cut their teeth in the 1980s. And they give us a firm foundation on which to build. Several of the concepts we will test in our program could, if successful, give us efficiency improvements and operational improvements over the technology proposed for Freetown. But none will be cleaner.

Massachusetts has a golden opportunity to take a step into the future of clean coal-fired power generation.

But the critics will say, "What about CO_2? What about the greenhouse effect?" All fossil fuels—coal, oil, natural gas—emit that. But many of the technologies we will demonstrate, because of their high efficiencies, will emit as much as 20 to 35 percent less CO_2 than a conventional coal plant.

Issue number one: Clean air and acid rain.

A new and stronger Clean Air Bill is at the top of the President's domestic agenda. And so too is it among most members of Congress.

Clean coal has a tremendous stake in the Clean Air debate. We expect the bill that ultimately emerges will keep the door open for Clean Coal, but how wide that opening will be is anyone's guess. The Senate is still locked in debate – the bill that was to be offered on the floor today is going to be delayed at least until tomorrow.

And if you look at some of the ideas coming out of the House, you'll find a proposal to target Round 4 and 5 funding specifically for plants affected by the Phase One acid rain controls. If you want to know our opinion, we think the door should be opened wider than that. We're laying the foundation in this program for the next generation of coal technologies – technologies that will take us well into, if not through, the 21st Century. In my mind, we can't afford to compromise that foundation by changing the program into a regionally focused effort.

We're laying the foundation in this program for the next generation of coal technologies – technologies that will take us well into, if not through, the 21st Century.

And of course, there is the overriding issue of the deadlines for clean air compliance. They are tight. And if Clean Coal technology is going to be used to meet these deadlines – even with the 3-year extension in the President's bill – this demonstration program must proceed flawlessly.

But the question being asked on the Hill right now is almost 180 degrees different. Rather than maintaining the fast pace of the program, some are asking "Might it not be better to wait? Wait until the acid rain bill takes final shape, then conform the Round 4 Program Opportunity Notice to the provisions of the bill?"

Or the corollary to that: "Make Round 4 a deployment round – perhaps targeting specific kinds of technologies that will be needed within the timeframes expected from the bill. Make it a retrofit-only round. Or solely a repowering round."

Well what do you think? That's what we want to hear today.

Issue Number Two: Foreign participation.

The issue of domestic competitiveness is high on this Administration's agenda. Where do we draw the line between acquiring the world's best technology and protecting the investment of U.S. taxpayers? How do we ensure that U.S. companies backed by U.S. dollars are going to keep, or acquire, a competitive margin in global markets?

How do we protect or create U.S. jobs without denying industrial customers or private consumers access to the most economical and effective technology?

I will say this: Policymakers may differ about where the line should be drawn, but they are unanimous in their belief that we have to spell out exactly what our policies are before we ask you to submit proposals. With the levels of cost-sharing in this program, uncertainty is deadly. It's only fair that you know the rules before we ask you to play the game.

How do we protect or create U.S. jobs without denying industrial customers or private consumers access to the most economical and effective technology?

So, we are going to have foreign participation spelled out in the solicitation. You will know where we stand and how we are going to score proposals from that standpoint. The question we have for you today is "Where do we draw the line between attracting the best environmental technology and protecting U.S. interests?"

Issue Number Three: Repayment.

They told me that soon after I became Assistant Secretary, I would start having recurring nightmares in which I would see the word "repayment" over and over again. I was also told that many of our industrial participants already have had that nightmare.

But we must recognize that the U.S. taxpayer has a stake in this program—and it's a big stake.

And contrary to a straight R&D program, this program is at the very threshold of commercial use, with market-based investments and the potential for market-based profits. The taxpayer is a financial partner in this program, and we continue to believe that because of this, the taxpayer must share in some measure of the profits when, or if, they accrue.

The repayment provisions in each of the previous rounds of competition were different. And the question we must ask you again is "Should Round 4 be different also?" Is there a better approach to protecting the taxpayer's investment?"

Issue Number Four: Global Climate Change.

I know there is a great deal of debate by very reputable scientists over the true nature of global climate change. Yet, everyone agrees that the politics are beginning to influence public policy. I think this influence is being felt more rapidly that most people in the coal industry realize. The political pressures and economic stakes inherent in the acid rain issue are small potatoes compared to what might be coming down the pike with global warming.

For example, you all know that proposals have been made to cut CO_2 by as much as 20 percent. What are the consequences of reducing CO_2? To put the answer in perspective, you could wipe out all the coal plants in this country overnight, replace them with nuclear plants, and you would reduce greenhouse gas emissions by only three percent. That's all.

...you could wipe out all the coal plants in this country overnight, replace them with nuclear plants, and you would reduce greenhouse gas emissions by only three percent. That's all.

The fact is that the developing nations of this world are likely to use 150 percent more coal in the year 2000 than they did in 1987 and we're not going to be able to tell them "no you can't do that. We did, but you can't."

The fact is that we have the best computers in the world. And we still can't calculate the relationship between temperature on the ground and cloud cover in the sky.

And yet, given all of this, many people have already drawn conclusions. They perceive that coal is the reason we have a global warming problem, real or not. The perception is: get rid of coal and you get rid of the problem. We cannot allow that perception to drive policy.

As I said earlier, we can address the global warming problem —to a large extent and in the relatively near term— through clean coal technologies, Boosting efficiency is the best means we have at our disposal today. For each five percent efficiency improvement in generating power from coal, CO_2 emissions can be reduced by 15 percent.

So the question is: "Should we give extra credit in the next solicitation to technologies that address global warming, through efficiency improvements or other means?"

There are, of course, other issues—and by not stressing them here, I don't mean to slight their significance. We need to talk about intellectual property, about the format for proposals, about the relative weight given to selection criteria, and about the cost and time it takes for you to prepare a proposal.

That's the scope of this meeting. It's important. It's what we need before we can put out our call for proposals on June 1.

So let me again thank you for being here. And please, just as I will not be reluctant as the new Fossil Energy Assistant Secretary in telling you what I think, please do not be reluctant in telling me, or us at the Department of Energy, what you think.

Robert H. Gentile is the Department of Energy's Assistant Secretary for Fossil Energy, a position that oversees the Department's coal, oil, and natural gas programs. He was sworn in as Assistant Secretary on February 27, 1990, after being nominated by President Bush on January 25, 1990, and confirmed by the U.S. Senate on February 22.

Prior to his service with the Department of Energy, Gentile headed the Office of Surface Mining Reclamation and Enforcement from March 20, 1988, to August 14, 1989, first as Acting Director, then as President Reagan's appointee. He has also served as Liaison for Coal Affairs to both the Secretary of the Interior and the Interior Department's Assistant Secretary for Land and Minerals Management.

From 1982 to 1986, Gentile was Chief Executive Officer of The Ohio River Collieries Group, a consortium of companies conducting coal operation, construction and land development, agriculture and trucking operations in eastern Ohio. For seven years prior to that, he was President of N&G Construction Company which became part of The Ohio River Collieries Group.

From 1970 to 1975, Gentile was a Department of State Foreign Service Officer assigned to the Peace Corps. His assignments included three years as Deputy Director of Peace Corps Operations in Brazil.

CHAPTER 4

SUMMARY PROCEEDINGS OF THE WORKING SESSIONS

Preceding Page Blank

4.1 THE FIRST PUBLIC MEETING

THREE WORKING GROUPS
SAN FRANCISCO, CALIFORNIA
FEBRUARY 13, 1990

Preceding Page Blank

4.1.1 Working Group Number 1

Public Meeting of February 13, 1990
San Francisco, California

J. Strakey, Chairman
T. Bartke, Co-Chairman

Working Group #1 was attended by 19 participants, including utility representatives, equipment manufacturers, technology developers, technical consultants, Congressional staff and news media representatives. Input was primarily from the utility, technology development, and consulting sectors. The focus of the working group was to solicit opinions, recommendations, and, if possible, consensus in several areas of concern to the Department of Energy (DOE):

1. Reconciling foreign participation with U.S. interests
2. Repayment of the government investment
3. Intellectual property rights
4. Carbon dioxide emissions and global warmup
5. Purpose/focus of CCT-IV
6. PON methodology

Reconciling Foreign Participation with U.S. Interests

The first three CCT solicitations placed no limitation on foreign participation except for the requirements of domestic site location and use of U.S. coal. The question was raised whether DOE should place additional limits on foreign participation in CCT-IV. Possible approaches to PON limitations included:

- stronger contract provisions
- selection criteria
- program policy factors
- qualification criteria

Preceding Page Blank

Opinions

- Current protection offered for U.S. technologies is adequate.
- The technology demonstrated should not be limited by the source of its ownership.
- Protectionism could lead to an undesirable monopoly position for the technology supplier.
- The U.S. needs to demonstrate the best, lowest-cost options.
- Let the technology options be determined by the free market.
- CCT-IV should stay out of foreign policy issues.
- Don't build protectionist walls.

Consensus

The consensus of the group was that the DOE should not place any additional restrictions on foreign participation in CCT-IV. It is not an issue of industry, and the participants were surprised, and somewhat irritated, that the DOE would even consider additional foreign participation limitations in CCT-IV. Limitations would be counterproductive to the objective of cleaning the environment and could easily backfire on the U.S. The unanimous feeling was to let the free market system work and may the best technologies win.

Repayment of the Government's Investment

Current DOE policy is to recover funds from a CCT project up to the Government's contribution to the project. The question was raised whether changes are warranted to be more equitable to the participants in CCT-IV.

Opinions

- Drop the repayment requirements.
- Limit repayment to phase 2 where construction and equipment costs are high.
- Pass the costs on to the technology owner.

- DOE needs to come up with a compromise on repayment so utilities don't have to face PUC/PSC's and run risk of not being allowed to pass costs to rate base customers.

Consensus

The concept of repayment was not well received by the participants. Industry feels that government should share the financial risk of a demonstration and subsequent benefits without expecting repayment. It was felt that the role of government is that of a "bank of last resort" and its loans should be immediately forgivable. The consensus was to drop repayment from CCT-IV; in lieu of that, make it easy to forgive the "loan" in whole or in part.

Intellectual Property Rights

Current DOE practice is to make available for publication all data first generated under contracts or financial assistance agreements entered into by DOE. The question was raised whether CCT participants should be given the ability, at least for a limited period of time, to treat contract data first generated in a CCT cooperative agreement, as though it were proprietary.

Opinions

- No strong opinions were expressed.
- A period of 18 months of such protection was mentioned as an example (superconductivity research).

Consensus

Since the participants were not especially interested in this issue, it was assumed to be of little or no importance to the participants. It may be that if more equipment vendors or technology developers were present, there might have been stronger opinions expressed.

Carbon Dioxide Emissions and Global Warming

Carbon dioxide emissions and attendant global warming have recently become popular national and international topics of debate. While scientific evidence and opinion vary widely regarding significance, trends, eventual impacts, and civilizations' role in the issues, DOE is concerned. CCT-III acknowledged these concerns by providing extra credit for projects which reduce emissions of global warming gases. The question was raised whether and what DOE could do in CCT-IV to better ensure selection of projects which are improvements from a global-warming perspective.

Opinions

- Focus of CCT-IV should not be on CO2 reduction.
- Focus of CCT-IV should not be on SO2/NOx reduction.
- Focus of CCT-IV should be on improved process efficiency.
- Base efficiency on the complete cycle -- mine-mouth to delivered power.
- Don't give credit for CO2 capture or use; e.g., EOR.
- The more efficient the technology, the lower the emissions of CO2, SO2, NOx, air toxics, etc.
- Focus CCT-IV on higher efficiency technologies, and not necessarily on a least-cost basis.
- All other issues will be resolved as a result of improved efficiency.
- Efficiency of fuel use needs to be the key of CCT-IV.
- Don't penalize technologies that generate extra CO2 (e.g., scrubbers).
- Split evaluation between SO2/NOx reduction technologies and new higher efficiency technologies.
- SO2/NOx reduction technologies should get no support.

- Higher efficiency has "stand-alone" value
  - o lower emissions per unit of energy
  - o saves resources
  - o leads to lower costs.
- The energy industry needs an incentive program analogous to the auto industry where fuel-efficiency standards resulted in a more competitive U.S. industry in world markets.

Consensus

There was strong sentiment and complete agreement that CCT-IV needs to emphasize process efficiency and not SO2/NOx or CO2 reductions per se. The consensus was that improved process efficiency will result in reduced emissions, reduced costs, and reduced resource consumption. Technologies that generate extra CO2 (scrubbers) should not be penalized; technologies that result in CO2 capture or CO2 utilization should not be given extra credit. Technologies that reduce CO2 generation at the cost of lowered efficiency should not be given extra credit. Only technologies that improve process efficiency should be given credit or receive extra credit.

Purpose/Focus of CCT-IV

The overall purpose of the CCT program is to assist development of technologies that will yield significant benefits to the U.S. in terms of cleaner air and increased use of coal. Each of the previous CCT solicitations had a particular focus:

I. Demonstration of technologies to promote continued and future use of coal as an energy source.

II. Demonstration of innovative clean coal technologies to retrofit or repower existing facilities in order to reduce SO2 and/or NOx emissions.

III. Demonstration of technologies capable of reduction of SO2 and/or NOx and/or provide for future energy needs.

The question was raised as to how DOE can frame the CCT-IV solicitation to accommodate the Congressional direction as well as the pending Clean Air Act legislation.

Opinions

- Do not delay the CCT-IV solicitation while awaiting Clean Air Act legislation. A delay of six months could impact the ability to meet deadlines imposed by the Act.
- Emphasize long-range technologies.
- Emphasize broad mix of technology options.
- Include good mix of gasifiers for all niches.
- Keep the "new fuel forms."
- Include "coal cleaning."
- Make existing utilities more efficient.
- Address needs of existing facilities as well as future energy needs.
- Include least-cost compliance options.
- Fuel switching should be considered a technology, albeit not a "high-tech" technology.
- Include the possibility of deployment projects.
- DOE needs to communicate CCT-IV purpose clearly:
  - o if DOE can predetermine technology *categories and dollars per category, state it* clearly in PON.
  - o if DOE can predetermine the mix of technologies, state it clearly in PON.
- Give extra credit for control of air toxics and avoided emissions.
- Include improved SO2/NOx reduction for 500 MW and larger power plants.
- Deployment of advanced scrubber designs could be one design at several plants (replication) or several designs for comparison at similar plants.

Consensus

There was no strong consensus on a specific focus of CCT-IV, only that DOE needs to state clearly what the focus of the solicitation is. There was no consensus that CCT-IV needs to be flexible enough to allow industry to propose a broad variety of technologies for the future and also propose deployment-oriented projects (e.g., advanced scrubbers). Choice of retrofit, repowering, or replacement should be left to industry as economics dictate.

PON Methodology

Previous solicitations have been criticized as confusing with respect to:

- o terminology
- o evaluation criteria/weighting of criteria
- o timing
- o proposal preparation costs.

The question was raised regarding how DOE could structure the PON so it is easier to read, understand, and respond to.

Opinions

- Clarify the reference plant concept and worksheets.
- The reference plant is appropriate for retrofit applications only, not for IGCC, new fuel forms, fuel cells, etc.
- The reference plant methodology penalizes innovative technologies.
- The PON needs a different reference approach for non-retrofit technologies.
- Consider the ultimate fate of all pollutants, not just the reduction in SO2/NOx, in the evaluation process.
- Commercialization factors should be weighted more heavily than demonstration factors.
- DOE should retain and use the option to request clarification from proposers.

- The two-step solicitation approach is a good idea, but time constraints and the extra effort/costs involved do not justify this approach.
- Preproposal conferences after both a draft and final PON are a good idea, but time constraints will not allow it.

Consensus

The majority of participants have not been proposers to the previous three PON's. Opinions and consensus were from a minority of participants. The primary issue related to the reference plant concept. Consensus was that the reference plant concept is most meaningful for retrofit technologies. If the reference concept is to be retained, it needs to be expanded to cover the complete range of technology categories so non-retrofit technologies are not penalized. All technologies should have equal opportunity to get credit in all evaluation criteria. There was consensus that time constraints for PON publication, proposal preparation, and evaluation preclude alternative approaches to obtaining additional comments proposers or from having discussions with offerors. The emphasis on moving rapidly in the CCT program is greater than emphasis on clarification by DOE or by proposers.

Summary

The often lively and sometimes heated discussions in Working Group #1 of the San Francisco CCT-IV public meeting led to the following general conclusions.

- o DOE should not include additional constraints on foreign participation in CCT-IV. Let the free market principles apply.

- o DOE should not include repayment in CCT-IV. If repayment must be included, DOE should pursue ways to allow forgiveness of the repayment of the DOE loan.

- Intellectual property rights is a difficult area when dealing with the Government. The issue will be resolved on a case-by-case basis through negotiation.

- DOE should emphasize process efficiency improvements in CCT-IV and not CO2, SO2, and NOx reductions. Efficiency improvements will naturally result in emissions reductions.

- The focus of CCT-IV should be on the mix of technologies which industry feels will address retrofit, repowering, and replacement. The mix should include new fuel forms, innovative technologies, and the possibility of deployment. Do not delay the CCT-IV PON.

- DOE needs to replace the single reference plant with a variety of reference systems which will allow all categories of technologies to be equitably evaluated.

4.1.2 Working Group Number 2

Public Meeting of February 13, 1990
San Francisco, California

G. Friggens, Chairman
J. Ruether, Co-Chairman

There were 22 attendees in the Working Group, including foreign government, technology vendors, architect/engineers, and private interest groups.

Most of the available time was spent discussing four issues: repayment, foreign involvement, global warming, and acid rain legislation. High points of the discussion were as follows:

Repayment

A participant stated he felt that repayment adversely affects both the number and quality of proposals that DOE receives in CCT solicitations. He stated that it complicates the negotiation process leading to a Cooperative Agreement and contributes to long pre-award periods. He requested a vote on the proposition to eliminate repayment. Such a vote was taken, and the proposition was carried by a large majority.

The Chair asked whether an improved repayment scheme was needed over that used in CCT-III, if the necessity of repayment was accepted. All but one participant felt that the approach used in CCT-III was acceptable. The dissenting participant suggested it was improper for DOE to seek repayment from hardware suppliers and equipment vendors as has been done in CCT-II and -III. He claimed that this group benefits less than the owner of the demonstration facility from the Government's financial participation. He suggested that repayment should be made by the demo facility owner if it continued to operate beyond the lifetime of the cost-shared demo period.

There was no objection expressed to the DOE's sharing of licensing fees as a means of recoupment. Except for one dissenter, the percentages used both for equipment sales and for licensing fees in CCT-III were deemed acceptable.

No support was expressed for the Government getting repayment in excess of its contribution, or for extending the repayment period beyond 20 years.

Foreign Involvement

A lengthy discussion was held to consider whether any restrictions should be placed on foreign involvement in the CCT program. No sentiment was expressed to limit foreign participation in any way. It was felt that the goal of the program is to encourage the use of U.S. coals in an environmentally superior manner by bringing the best technology in the world to the U.S. for demonstration. Any restriction on foreign involvement would impede that goal. As well, restricting foreign participation would limit foreign capital that would otherwise be available to develop exports of U.S. coal.

The point was made that it is wrong to view cost-sharing of the U.S. Government with foreign firms as a subsidy for developing foreign technology. The program is for demonstration of technologies in the U.S. with U.S. coals, not for developing the technology. The demonstration project is to confirm the performance of the proposed technology in a U.S. setting with U.S. coals.

Restricting foreign participation was seen as protectionist. It would tend to restrict the technologies available to utilities and other users to "second best" on a worldwide basis. The economic consequences of such a restriction were felt to be greater than any short-lived advantage that would accrue to the U.S. by restricting foreign participation in the program.

It was proposed to allow demonstration sites in Canada in CCT-IV with the use of U.S. coals. Arguments in favor of this change include the fact that much U.S. coal is imported by Canada, that control of acid rain precursors migrating from the U.S. to Canada was responsible for the direction of the program after CCT-I, and that the two countries are now linked by the Free Trade Act. After discussion, the proposal was put to a vote, where it was decisively defeated.

Global Warming

Little sentiment was expressed for increasing the importance of a proposed technology's performance with respect to emission of greenhouse gases in the selection process. One participant stated that the proper place for Governmental support in this area was R&D, not a demonstration program.

The Group favored use of superior thermal efficiency as the means by which DOE judged technologies with respect to greenhouse warming. Opening the competition to technologies aimed at collecting and disposing of carbon dioxide was not supported.

The Group favored minimal discussion of greenhouse warming in the PON. Most favored the way it was handled in CCT-III where extra credit was given for technologies with high thermal efficiency. A vote was taken on three possible approaches to complying with Congressional direction on selecting technologies that addressed global warming. The propositions and the votes were as follows:

1. Leave as in CCT-III, i.e., give "extra credit"
2. Have a new selection criterion for minimal CO2 emission
3. Have a new program policy factor

Acid Rain Legislation

Participants did not feel that the PON should be tied directly to the anticipated new acid rain legislation. However, the priorities that were driving the new legislation should be reflected in the PON. This would

4.2 THE SECOND PUBLIC MEETING

FOUR WORKING GROUPS
BOSTON, MASSACHUSETTS
MARCH 1, 1990

Preceding Page Blank

4.2.1 Working Group Number 1

Public Meeting of March 1, 1990
Boston, Massachusetts

J. Ruether, Chairman
T. Atwood, Co-Chairman

There were 28 attendees in the Working Group, including vendors, not-for-profit organizations, utilities, government, and engineers and constructors.

Most of the discussion focused on the impact of pending clean air amendments on the program, foreign involvement, repayment and global warming. These discussion items were addressed through questions posed by the Chairman. These queries and the condensed majority response of the group members is provided below. If a strong minority view was expressed or a unique observation was made, these were also noted.

Clean Air Amendment (CAA) Impact of CCT-IV

Should the solicitation reflect the proposed requirements of the CAA?

The majority of the working group supported keeping the Clean Coal program on the path of achieving the same goals of CCT-I, -II and -III since there was considerable merit in maximizing the reduction of SO2 and NOx through the most cost effective approach. Since the requirements of CAA are not defined and the conclusion of the legislative process could take months, it would not be practical to tailor the CCT-IV solicitation to the needs of a yet to be defined law. The current objectives of the CCT program meet the long term intent of any proposed version of the CAA. However, DOE should maintain flexibility in the CCT-IV solicitation to allow future changes in a project, after selection, once the CAA requirements have been defined.

Preceding Page Blank

Should emphasis in CCT-IV be placed on high percentage and removal technology?

The emphasis should be placed upon the cost effectiveness of removal technology recognizing that higher levels of removal will be more expensive to achieve. DOE should maintain a balanced program that demonstrates higher cost high removal technology as well as lower cost lower removal technology, since there is a potential market for both, especially with the credit tracking concept being considered under the CAA.

Should CCT-IV encourage only retrofit or repowering technologies?

None of the working group members supported limiting the technology eligible for cost sharing to retrofit or repowering. This would limit industry's options for meeting future environmental requirements. The working group supported a solicitation that allowed diversity for achieving near term and long term needs. As an aside, many in the group viewed retrofit as the technology to accomplish the near term CAA emission limits and repowering as the technology to maintain these limits in the face of increasing demand.

Should the program provide support for research and development?

The general opinion was the program should not be expanded to include research and development, since DOE offered support for these activities elsewhere. However, a representative of a smaller organization with less financial means, who did not have the benefit of a government R&D contract, wanted to permit CCT support of R&D. There was agreement that a prudent approach for a demonstration project supported in the CCT program is for DOE to cost share R&D activities that specifically support the demonstration.

Should the CCT-IV solicitation include the replication of commercially available technology?

The CCT-IV solicitation should not allow selection of technologies that are already commercially accepted by the utility industry or other potential customers. However, the CCT-IV solicitation should allow for the replication of a commercially available technology that has not been fully accepted by the potential market. Market acceptance may require three or four demonstration projects, possibly including projects using the same technologies but demonstrating operation with different feedstocks. For a technology to be bought and installed by a utility, the vendor must be able to stand behind it with a performance guarantee. The vendor must have a body of operating experience to have the confidence necessary to be bound by such a guarantee. It is appropriate for DOE to cost share in demonstrations that build the data base necessary for writing performance guarantees.

Should the CCT-IV solicitation be delayed to accommodate the CAA?

A resounding NO!!! Do not tamper with a program that is already working; CCT-IV can handle the CAA impacts.

Foreign Participation

Should foreign participation in CCT-IV be limited? If so, on what basis?

Any restriction on foreign participation should be done with great care. Besides the obvious cost of potentially barring world-class technology from the program, there could be other costs harder to quantify. For instance, by preventing participation by U.S. companies in commercialization of a technology that subsequently enjoys world wide use, the U.S. companies are prevented from sharing in that market.

For any cooperative demonstration project undertaken with a foreign country, any restrictions DOE might put on the use in foreign countries of data generated

should take into consideration the cost sharing formula for the project. The more money a foreign company contributes, the greater should be his rights to the data.

If restrictions on foreign participation is adopted, DOE should not try to define "foreign company" and make a yes/no decision for each proposer as to whether they are considered "foreign." Rather DOE should focus on the added value to the U.S. that would result from any proposed project. This would permit DOE to distinguish between foreign firms that have a large presence in the U.S. from those that have a minimal presence, such as a sales office only. Two ways were identified by which a foreign company could add value in the U.S. One was by the use of U.S. labor, including design, engineering, and manufacturing work. Another was by increasing export markets for U.S. coal or manufactures through use of the proposed technology.

It was suggested that the "value added to the U.S." could be used as a tie-breaker for projects that were otherwise equally scored in the competition for selection.

Global Warming

Should the CCT-IV solicitation address the reduction of "greenhouse gases" beyond credit for improved efficiency?

No. If any consideration in the selection process is given to greenhouse gas emissions, the proper way to do it is by recognizing improved efficiency. It was noted that the technologies being proposed for demonstration were not designed to address the problem of greenhouse gas emissions, and that it is improper so late in the development cycle to create an important additional criterion by which they are judged. Proposals for CO2 scrubbers should not be entertained.

Repayment

Should the repayment requirements be changed from CCT-III?

Interestingly, this question did not raise the passion that it did at the San Francisco workshop. In fact, the group provided a constructive suggestion of making the repayment requirements more flexible than those in CCT-II or -III. It was pointed out that operating revenues from installations using the demonstration technology were a possible source of repayment. Such installations could include both the demonstration project and subsequent replications. DOE could receive a percentage of operating revenues after the installation was up, running, and generating a positive cash flow. This approach could be used instead of assessing a percentage of equipment or licensing costs as has been done in earlier CCT rounds. The suggested alternative would have the advantage of delaying repayment obligations until a project was in a profit making position, rather than loading them at the beginning of a project.
No one supported paying DOE more than the DOE investment.

Other

Should a five-year period be available for keeping "certain contract data" from being available for disclosure through the Freedom of Information Act?

The question was found to be too complicated to treat completely in the available time. Some protection or information developed in a project already available, and how much additional protection the proposed change of rules would provide was not clear. The general idea of allowing an industrial participant to have exclusive use of data generated in a project for a period of time was supported by a majority.

4.2.2 Working Group Number 2

Public Meeting of March 1, 1990
Boston, Massachusetts

S. Oldoerp, Chairman
G. Lynch, Co-Chairman

Working Group #2 was attended by 24 participants including utility representatives, equipment manufacturers, technology developers, technical consultants, universities, state agencies and news media representatives. The purpose of the working group was to solicit opinions and recommendations in several areas of concern to the Department of Energy (DOE):

1. Carbon dioxide emissions and global warming
2. Focus of CCT-IV PON
3. Repayment of the government investment
4. Foreign involvement

Carbon Dioxide Emissions and Global Warming

In the opening Plenary Session, Robert Gentile, Assistant Secretary, Fossil Energy, stated that U.S. coal-fired power generation contributed only 3% of the greenhouse gases. The group believed this estimate was much too low by 5-6 times and recommended that the Department of Energy be careful in using data that is not fully supported.

The group observed that no Congressional mandate exists for the Clean Coal Technology Program to reduce greenhouse gases. It was noted that Public Law 101-121, which authorizes the CCT-IV program, does not mention greenhouse gases.

A few participants did note that a possible trend is emerging at the Public Utility Commission level to emphasize environmental concerns over economic and engineering concerns. As evidence of this trend, a new administrative rule is due to take effect in the State of Massachusetts which is a step toward environmental degradation costs within the utility rates.

Most participants believed that too little is known about greenhouse gases. As a result, the DOE should not develop specific criteria for evaluating CO2 and greenhouse gases for the CCT-IV solicitation. The group consensus was that if CO2 and greenhouse gases are incorporated in the solicitation, the evaluation should be on an "extra credit" basis using an efficiency criteria. Many participants believed that greenhouse gases were much less important than waste disposal, and DOE should increase the amount of credit given to turning waste into useful by-products.

One participant cautioned that whatever approach DOE takes, it should not conflict with the CCT Programmatic Environmental Impact Statement (PEIS) that was published last year. Additional emphasis on CO2 and greenhouse gases could necessitate a rewrite of the PEIS.

Focus of CCT-IV PON

This discussion area was divided into the following topics:

1. Timing of the CCT-IV solicitation versus the proposed Clean Air Act Amendments
2. Deployment/replication emphasis

Most utilities and new fuel form companies preferred delaying the CCT-IV solicitation until the enactment of the Clean Air Amendments. These participants believed that the Phase I investment window has already been missed, and a delay will allow the Clean Air Act Amendments to shape the market.

All other participants in the group believed that DOE should not delay the CCT-IV solicitation. They believed that a delay opens the possibility of political pressure redirecting the program, and it is difficult to predict when the Clean Air Act Amendments will be enacted. Additionally, a delay would definitely cause CCT technologies to miss the investment window for Phase I emission targets.

The group voted on the CCT-IV "timing" issue. There were 18 votes in favor of proceeding with the solicitation as scheduled and three votes in favor of a delay.

On the issue of deployment/replication, most of the group believed that DOE needs to encourage a mix of technologies and leave refinements to be done by the private sector. Several participants believed that the Clean Air Act Amendments will dictate what technologies get replicated, while others believed that duplication is a necessary ingredient to commercialization for user acceptance. Essentially, most of the group believed that a "cookie cutter" approach should not be used to deploy CCT technologies.

The group voted on the "deployment/replication" issue. Ten participants voted in favor of PON language that explicitly encourages replication. This would make it clear that demonstrations of new technologies are not the only eligible projects. However, seven participants voted on opposing views that one demonstration per technology is not enough. Additional demonstrations of the same technology must show an improvement through economics of emission reductions. One voter abstained.

Repayment of the Government Investment

Although DOE representatives stated that repayment of the government investment would probably be a requirement of the CCT-IV solicitation, participants noted that there was no Congressional mandate or legal basis for repayment.

Several participants pointed out that repayment is very troublesome to utilities who are the principal participant and if the project is located in a state not particularly sympathetic to coal usage. Most of the group seemed to believe that the changes in repayment in CCT-III were an improvement over the provisions in CCT-I and CCT-II.

One participant suggested a novel idea for DOE to consider for repayment. This idea was to negotiate repayment after signing the cooperative agreement. This would quicken the pace of negotiations while permitting more rapid development of the projects and providing the contractors more time for market investigations. Additionally, DOE would still control the project, and no commercialization of the technology would occur until DOE has an acceptable repayment plan.

The group voted unanimously that repayment of the government investment should be removed from the CCT-IV solicitation.

Foreign Involvement

The group had very diverse opinions in the area of foreign involvement. Some participants believed that DOE should not limit foreign involvement in the CCT Program when DOE is actively recruiting foreign participation in the Super Conducting Supercollider Program. Some members believed that restrictions could cause us to lose some of the better technologies.

Other participants believed that foreign participation should be restricted as many countries restrict U.S. companies. These participants thought DOE should add criteria in the business part of the evaluation based on equity ownership. Additionally, they thought that the repayment provisions should be stricter for foreign companies versus U.S. companies.

The group voted on whether or not foreign involvement should be restricted in some fashion. Nine participants voted for no restriction and seven participants voted to add restrictions. Two participants abstained from voting.

4.2.3 Working Group Number 3

Public Meeting of March 1, 1990
Boston, Massachusetts

G. Friggens, Chairman
K. Hancock, Co-Chairman

Working Group #3 was attended by 21 participants, including technology developers, equipment manufacturers, utility representatives and private sector special interest groups. A good mix of view points was expressed in the session due to the diverse interests of the participants. Approximately one-half of those in attendance represented technology owners/equipment manufacturers. A summary of each of the principal issues discussed in the Workshop is presented below.

Repayment of the Government Investment

The DOE Program Opportunity Notice (PON) provisions that require repayment of the Government's investment represented a troublesome aspect for many companies wishing to participate in the Clean Coal Program. Several individuals stated that raising capital to move new technology forward is difficult, given the averseness to risk of financial markets that exist in the U.S. The repayment requirement places an additional stress on securing financing, as it becomes harder to establish that a favorable return on investment can be achieved. Requiring repayment may slow or possibly kill negotiations at a time when speed of awarding and completing projects is important to impact acid rain legislation. It was also noted that repayment puts an unnecessary financial burden on the first several projects immediately following the demonstration, possibly making these projects uncompetitive at a critical point in the commercialization process.

However, 70 percent of the group felt that the concept of repayment is an acceptable one, provided that the conditions on payback are sufficiently flexible. The group believed that if profits were being made, then it would be reasonable to pay the Government a portion of those profits. Repayment was characterized as a "when"

question. After a project is successful and a company is making money, the Government should share in the profit generated. It was suggested that DOE delay or phase in repayment as the revenue streams from the demonstrated technology turn profitable.

The group was asked whether DOE should be able to recover more than its investment in a project, should the technology become very successful. This would make DOE more like an investment partner. Participants were unanimous in rejecting this concept. It was stated that the Government exists to provide a public service. Attempts to place the Government in a profit-making, industrial business partner role are totally inappropriate.

Foreign Participation in the Clean Coal Program

The issue of reconciling foreign participation with U.S. interests was discussed at length. This topic area was viewed as complex and it was difficult to assess causes and effects. In the end, the group was in full agreement that the foreign involvement issue is best left alone, other than continuing any U.S. preference provisions that already exist in the PON.

Group opinions expressed on this topic included:

- Limiting foreign involvement is not compatible with the stated goals of the program in terms of fostering the use of U.S. coals in an environmentally responsible and economically efficient manner.

- Foreign involvement limitations could also detrimentally affect the availability of investment capital.

- DOE should be flexible; sometimes the only technology source, or clearly the best technology source is foreign.
- The very question of what constitutes a foreign firm is extremely complex. No good definition emerged from the group.

- Many participants represented multinational businesses serving international markets and viewed foreign involvement restrictions as isolationist.
  - -- The U.S. operates in a global economy; consequently, strong U.S. preference requirements may come back to harm domestic interests through retaliatory measures.
  - -- The U.S. taxpayer benefits from the best use of the best technology whether it is U.S. or foreign.
- Companies with a strong U.S. presence are already favored in the U.S. as end users seek technologies that have an adequate servicing network; and other infrastructure in place to meet customer needs.
- One participant noted that he is developing a new technology that is considered high risk to the utilities. If the U.S. Government will not support his technology development, he has no other choice but to seek foreign capital, given the lack of U.S. capital available for long term development projects.
- Should DOE elect to limit foreign involvement in the CCT-IV PON, the group stated that it is essential that this decision and the associated rules be clearly laid out in the PON so that proposers aren't misled.

Four possible approaches that DOE could use to limit foreign involvement were presented to the group for comment. These included:

- o Use of a program policy factor to place a limit on projects which add value in the U.S.

- o Use of a specific evaluation criterion in the PON that considers benefits to the U.S.

- o Inclusion of a "preference for U.S. industry in manufacturing" clause related to commercialization of the demonstrated technology.

- o Requirement of DOE approval for any future assignment of DOE-granted patent waivers.

Participants did not favor the use of a program policy factor by DOE, as it would introduce too much uncertainty to the proposers and also would be subject to more political influence. It was felt that whatever foreign involvement requirements evolve should be taken out of the gray area of program policy calls as much as possible.

The use of a comprehensive evaluation factor was seen to offer the best way to define exactly what would be evaluated and what its importance would be in the overall evaluation of the proposal. It was suggested that this factor should be classified under the Business and Management criteria in order to separate it from technical considerations.

The preference for U.S. industry in manufacturing clause during commercialization of the technology was viewed as difficult to measure and enforce. In particular, upon completion of the demonstration, the participant could not control what is manufactured by whom. (A possible exception: limited pieces of the technology which the participant owns and which are patent protected.)

The group was strongly opposed to DOE controlling foreign participation through the mechanism of restricting the use of its waived patents. This would amount to a company relinquishing control of its technical assets to a Government agency.

Coal Use and Global Warming

The group discussed how global warming should be addressed in the PON, given that Congress has directed DOE to ensure that a "substantial number of projects" reduce emissions of CO2 as compared to conventional technologies.

The group believed that given the complexity and uncertainty of the global warming issue. everyone's interest would best be served by staying with the approach introduced in PON-III; namely giving extra credit for technologies that provide extra efficiency. Further comments on this topic included:

- It is difficult to compare process efficiencies of mature technologies with those of developing technologies, as the benefits claimed for emerging technologies are often overstated.

- A problem exists in evaluating CO2 emissions related to projects which produce a clean fuel or alternate fuel form, since specific end uses will impact such emissions.

- If a safety valve is needed to meet Congressional guidance, the mechanism of a Program Policy Factor would be acceptable for minor adjustments.

Provisions of the Acid Rain Bill

The group began its discussion on the upcoming acid rain legislation by considering whether the CCT-IV PON should be delayed until legislation is passed so that the solicitation can better reflect the provisions of the bill. The overwhelming concerns of the group was that the PON should not be delayed as they believed enough is known right now to write the solicitation regardless of the outcome of the legislation.

With regard to whether the PON should address only retrofitting or compliance technologies on the one hand, or only repowering (or longer term technologies for new capacity) on the other, the group clearly believed that it was important to support diversity by allowing both.

On the subject of deployment, it was agreed that replication of previously demonstrated technologies should be allowed, but only to the extent that such replication is needed to accomplish the goal of the program; namely, to get the technology commercialized. This was viewed to be an additional one or two plants, in general.

Typical opinions on the topic of replication expressed by participants were:

- One demonstration is inadequate. A single demonstration will not convince the utility industry that a technology is commercially available.
- Replication must add value to the Clean Coal data base and not be simply another production unit.
- Upsizing should not be considered replication.
- Replication does not occur when two entirely different coals are demonstrated, for example, bituminous coal versus subbituminous coal.
- Deployment should be allowed to the extent that it fosters commercialization, but not for simply subsidizing the construction of additional units.
- DOE should not be coerced into accepting the same conservative standards that utilities demand. Too much duplication should not occur, especially at the expense of first-time demonstrations.

Intellectual Property Rights

The topic of intellectual property was discussed briefly and the group did not express strong opinions. The following comments were offered:

- It was noted that public release of operating data obtained from the demonstrations can be harmful as this information, when combined with patents, gives away a lot of useful data to competitors.

- While repayment is occurring, DOE should assist the participant by keeping data private, as this will aid DOE in receiving its maximum financial return.

- The cost to one company for processing DOE patent waivers was high. DOE should help keep private sector legal costs down.

Other Comments

Prior to closure of the Workshop, the following opinions were expressed on topics not yet brought into the discussions:

- The PON should present more realistic "Appendix I" reference cases. Sizes under 250 MWe should be used. More flexibility was encouraged so that all technology types can be encompassed.

- A recommendation was made to drop the stipulation that demonstrated technologies must be capable of being commercialized in the 1990's. Longer term solutions are important, especially in light of probable constant emission caps after 2003.

4.2.4 *Working Group Number 4*

Public Meeting of March 1, 1990
Boston, Massachusetts

J. Strakey, Chairman
T. Bartke, Co-Chairman

Working Group #4 was attended by 22 participants, including a utility representative, equipment manufacturers, technology developers, A&E firms, consultants, and federal and state officials. Input was primarily from equipment manufacturers and A&E firms. The focus of the working group was to solicit opinions and develop a consensus in four areas of concern to the Department of Energy (DOE) Clean Coal Technology (CCT) Program.

1. Reconciling foreign participation with U.S. interests
2. Repayment of the Government's investment
3. Focus of CCT-IV PON

Reconciling Foreign Participation with U.S. Patents

The first three CCT solicitations placed no restrictions on foreign participation except for the qualification criteria requiring use of U.S. coals and location of the demonstration site in the U.S. It was discussed whether and how additional restrictions should be placed on foreign participation in the CCT-IV Program Opportunity Notice (PON). Five approaches to restrictions included:

- Add a restrictive qualification criterion
- Add stricter contract clauses
- Add a program policy factor
- Add an evaluation criterion which would favor U.S.-owned technologies and projects
- Continue the CCT-III approach without change

It should be noted that the working group was well represented by U.S. companies that are partly or wholly owned by foreign concerns.

Opinions

- -- The U.S. has a free and open market -- don't change it.
- -- Don't turn your back to foreign countries.
- -- The foreign technology could be better than available domestic technologies.
- -- Use technology to benefit the U.S. regardless of the source.
- -- Demonstrate the commercial applicability of a foreign technology in the U.S.
- -- DOE should want the opportunity to introduce international technology in the U.S.
- -- Don't erect barriers to foreign technologies.
- -- Barriers could backfire in other trade areas.
- -- Industry will use cheapest source of material available, which usually means it buys locally where the plant is built. Even if the technology is foreign, most of the financial benefits would stay in U.S.
- -- We need to worry about the global village and not be isolationist/protectionist.
- -- Use the best technology available regardless of the source.
- -- Global warming is truly a global issue in need of global solutions.
- -- Just because U.S. company is owned by a foreign concern, it does not mean that the technology transfers to the foreign concern.

-- The U.S. has to be sensible and recognize how bad off the U.S. would be if foreign participation was eliminated in other areas, e.g., sale of T-notes to foreign countries.

-- Foreign participation has been beneficial to CCT in the past.

-- If something must be done, make it the least onerous alternative possible.

-- DOE probably has to do something because it is a political issue, but don't make it critical.

-- A program policy factor might chase off many good projects -- maybe the best.

-- Include a criterion for "value-added" but don't weight it heavily.

-- Limit the commercialization plan to the U.S. market or at least emphasize the benefits to U.S.

-- No need to make the PON more restrictive.

-- The previous (CCT-III) evaluation criteria were sufficient.

-- Leave the criteria the same as CCT-III.

Consensus

As in San Francisco, the consensus of this group was that DOE should not place any additional restrictions on foreign participation in CCT-IV. It is not the role of DOE to make foreign policy, and erecting barriers to foreign participation could backfire. Industry does not want to see DOE give up the potential benefits to the U.S. of using the best technology available. Likewise, industry does not want DOE to settle for potentially second-rate technologies by restricting the competitive nature of the PON. If DOE must place restrictions in the PON, the consensus was to take the least onerous approach. The least objectionable approach is to incorporate in the evaluation criteria a method to credit

projects which create a direct benefit to the U.S.; i.e., "value-added" jobs, equipment manufacture, etc. Use of a program policy factor was discouraged because of the unpredictable way it could be used. Additional contract provisions were discouraged because they would seriously impact negotiations and could jeopardize a final agreement. Finally, a qualification criterion was considered most undesirable. In the global business world it would be difficult, if not impossible, to clearly define a "foreign" concern.

Repayment of the Government Investment

The current DOE policy is to recover funds from a CCT project up to the Government's investment in the project. It was discussed whether changes to this policy are warranted.

Opinions

- -- Make repayment less onerous, i.e., easier to be forgiven.
- -- Extend the grace period to 10 years.
- -- Shorten the repayment period.
- -- Repayment should not be required if a project succeeds -- only if it fails.
- -- If repayment is necessary, it should be negotiable.
- -- Repayment bogs down the negotiation process and the resulting delays are not cost effective for the taxpayers.
- -- DOE should only worry about whether it gets repaid, not how it gets repaid.

-- Just have proposer agree to repay and let the proposer decide how, e.g., don't require repayment tied to marketing plan.

-- A tax on profit is easier to accept than a percentage of gross sales or licensing fees.

-- If a utility is the prime, allow assignment of repayment responsibility to pass down to the technology owner at the end of the demonstration (so the utility can pull out at that point).

Consensus

Several participants wanted it on record that they are opposed to repayment. It was the consensus that if repayment is a condition to participation in the CCT program, DOE should establish an equitable basis for repayment. If technology and equipment vendors are responsible for repayment, base repayments on profits earned. Repayment for utilities could be based on sales, but allow reassignment of responsibility from the utility to the technology owner. It was felt that investment without repayment was the proper Government role.

Intellectual Property Rights

Current DOE practice is to make available for publication all data first generated under financial assistance agreements. It was discussed whether CCT participants should be given the opportunity to treat such data generated in a CCT cooperative agreement as though they were proprietary for a limited period of time.

Opinions

-- This may not be a problem area because little or no potential data results from demonstration projects.

-- Patentable information is protected long before the project gets to demonstration.

-- Don't let this issue impact implementation of CCT.

-- If extending coverage puts participant in more competitive position, fine.

Consensus

The consensus is that this is not an area of great concern to the private sector. The technology owners and equipment vendors feel that they will have their patent protection established before they ever start on a demonstration project, so demonstration data will not need additional protection. The demonstration will serve to enhance the marketability of the (previously protected) demonstration technology.

Focus of CCT-IV PON

The overall purpose of the CCT program is to assist development of technologies that will yield significant benefits to the U.S. in terms of cleaner air and increased use of U.S. coals. Each of the previous CCT PON's had a more specific focus:

I. Demonstration of technologies to promote continued and future use of coal as an energy source

II. Demonstration of innovative clean coal facilities to reduce SO2 and/or NOx emissions

III. Demonstration of technologies capable of reducing SO2 and/or NOx and/or providing for future energy needs

The focus of the CCT-IV PON was discussed. The discussion included a number of issues which could have significant impacts on the PON and on the CCT program. The issues included:

- Incorporation of Clean Air Act considerations
- Delay of CCT-IV schedules to await Clean Air Act legislative language

- o Focus PON on retrofit only, or repowering only
- o "Superclean" technologies
- o Solid waste
- o Air toxics
- o CO2/greenhouse gases
- o New England-New York regional issues

Opinions

-- Don't amend PON to incorporate Clean Air Act.

-- Don't wait for Clean Air Act legislation since timing on PON is critical.

-- Clean Air Act implementation regulations will lag behind the Act by 18 months, so don't wait for the Clean Air Act because DOE and industry would lose two years.

-- If CCT was switched to deployment, it might make sense to delay the PON.

-- Don't make deployment the focus of CCT-IV.

-- Leave CCT-IV a demonstration program.

-- Don't limit PON to retrofit only, repowering only, etc.

-- Leave the possibility open for variety of technologies.

-- Leave options open for new technologies.

-- Allow a broad base of technologies in CCT-IV.

-- DOE needs to define "replacement."

-- DOE needs to clearly state that the demonstration could be at any location in U.S. and not tied to the commercial location.

-- The value of the demonstration program is the generation of data leading to commercialization.

-- Don't make changes in CCT-IV -- stick with the CCT focus which got us here.

-- Stop adding issues to CCT -- stick to the idea of looking at how to cleanly burn coal.

-- Don't talk about "superclean" until we first have "clean coal" technologies -- take developments one step at a time.

-- Superclean technologies should get extra credit.

-- Can't wait for supercleans -- must learn what we can, and do it now.

-- Keep supercleans at R&D level for now.

-- Target superclean technologies for new plants that would come on line well after 2000.

-- For CCT, drop superclean, drop CO2, etc., and stick with burning coal cleanly.

-- Give more weight/focus to solid waste issues.

-- Air toxics are well beyond original focus of CCT.

-- DOE and industry need to address air toxics, but not in the CCT program.

-- DOE should address air toxics in its R&D program.

-- Air toxics need R&D; technologies are not ready for demonstration.

-- Do not focus CCT-IV on CO2 reduction.

-- If DOE concentrates on CO2 today, air toxics next year, etc., the whole CCT program gets defocused and will have only knee-jerk reactions to popular legislation -- we don't want that.

-- Keep CCT out of the CO2 issue -- let the politicians take the lead.

-- Give only minor credit for CO2 control.

-- For political reasons, give extra credit for CO2 abatement.

-- On technical grounds, we don't know what to do in the area of CO2 abatement and disposal.

-- We are not far enough along in addressing SO2/NOx reductions, so we must not diverge into CO2, air toxics, etc.

-- Don't make CO2 issues as big as SO2/NOx.

-- CO2 reduction will occur as result of efficiency improvements.

-- NO! Don't establish CO2 generation as an evaluation criterion.

-- Don't penalize for CO2 generation -- only give some extra credit for reductions.

-- Focus on the efficiency issue -- coal to busbar power (don't include power line losses).

-- In New England and New York, for coal to be successful it must be environmentally as good or better than natural gas.

-- Future New England coal power plants will be built only by the IPP's.

-- Big New England utilities will opt for natural gas fired power plants.

-- IPP's will look to CCT, but will need government assistance in regulation and financing, or no CCT solutions will be used until the natural gas is gone.

-- Whatever is developed to reduce emissions must be supported by the Government in order for it to be implemented -- IPP's need federal help.

-- The utility industry needs government support to prevent brownouts, but maybe brownouts are needed to get proper attention focused on the problem.

-- Bottom line -- continue broad based clean coal technology development, so when the brownouts occur, industry will have a suite of options to correct the situation. It was noted that it will take at least five years to bring a given technology on-line following a decision to add capacity.

Consensus

As in San Francisco, the participants felt very strongly that DOE must keep the CCT-IV PON on schedule. If DOE waits a few months to incorporate Clean Air Act language, it might take another 18 months to see how the law is implemented through regulations.

This could mean a two-year delay for CCT-IV. Time is considered too important to CCT to justify waiting on the Clean Air Act. The only justification for delaying would be if the law requires a deployment program. In this case, delay should be minimized by amendment to the CCT-IV PON.

There was a strong consensus that DOE should not try to narrow the focus of CCT-IV, but to keep the broad-based approach used previously. CCT-IV should not be limited to retrofit only, repowering only, or any other technology type only. The recommendation was that DOE keep the original purpose of the CCT program, and do not make major changes.

In keeping with this attitude, the consensus was that DOE not emphasize "superclean" technologies, air toxics, or CO2/greenhouse gases. All these issues are important, all are trendy, and all are in need of research. But DOE should not develop specific evaluation criteria for them. If proposals address these issues, extra credit may be given, but the emphasis in these areas should be minor. These areas of research should be funded in the DOE R&D programs. The principal focus of CCT-IV should continue to be SO2/NOx reductions. Contrarily, the consensus was that DOE should put more emphasis on solid waste management. This is an area that will require demonstration of acceptable technology, and CCT-IV is an appropriate vehicle for addressing the issue.

There was not a strong consensus that process efficiency should be an evaluation criterion. This may have been a function of the participants' corporate interest. It was, however, recognized that addressing CO2 reduction through efficiency improvement does have merit, including recognizing the political realities.

Finally, regional issues (New England) were highlighted. The regional environmental regulations argue against coal utilization and for natural gas utilization. If coal is to be used in New England, New York, and elsewhere along the Eastern seaboard in the future, the Federal Government needs to provide assistance in regulatory issues so CCT projects can be commercialized in the region.

Summary

Working Group 4 in Boston included a number of competing equipment manufacturers and A&E firms. While this was in contrast to the San Francisco participants, the thrust of the comments and conclusions was the same at both public meetings. The following general conclusions summarize the group's opinions.

- o DOE should not place additional restrictions on foreign participation in CCT-IV. Erecting barriers to foreign participation could backfire.

- DOE should not require repayment in the CCT program. If, however, repayment is required, DOE should base it on profits earned rather than a percentage of equipment sales and/or licensing fees. Utilities should be allowed to reassign responsibility for repayment to the technology owner.
- Intellectual property rights are not a major issue.
- DOE should not try to delay the CCT-IV PON to await Clean Air Act legislation.
- DOE should not try to more narrowly focus CCT-IV, but should allow demonstration of a broad variety of technologies.
- Superclean technologies, air toxics, and CO2/greenhouse gas issues should not be emphasized or heavily weighted in CCT-IV. Extra credit would be appropriate, but these issues need to be addressed in DOE R&D programs, not in CCT-IV.
- The principal focus of CCT-IV should be on SO2 and NOx reductions.
- DOE needs to recognize regional issues such as in New England, and needs to take an active role in assisting industry both financially and in regulatory issues.

CHAPTER 5

WRITTEN COMMENTS RECEIVED IN RESPONSE TO THE MEETING NOTICE

5.1 EXPLANATORY NOTE

The notice of the public meetings that appeared in the *Federal Register* on January 16, 1990, included a provision for the submittal of written comments by individuals who were not able to attend in person.

Written comments were received from a diversity of interests, including private industry, electric utilities, special interest groups, and government entities. In the summary comments that follow, DOE has deleted all references to names, titles, organizations, etc., in order to confer anonymity on parties who may not wish to be identified, and also to permit suggestions and expressions of concern to be considered on their own merits.

Section 5.2 categorizes the principal views expressed in the written comments. Verbatim excerpts from the letters received are provided.

Preceding Page Blank

5.2 SUMMARY HIGHLIGHTS OF THE VIEWS EXPRESSED IN THE WRITTEN COMMENTS

Foreign Participation

If the U.S. is to have the best technologies applicable to U.S. coals, no limitation should be placed on foreign participation beyond that required in Clean Coal I-III, that is the demonstration project utilize a U.S. coal and be sited in the U.S.

Should limitations be placed, it is important that special consideration be given to Canadian owned firms noting the spirit of the Free Trade Agreement in place between the U.S. and Canada; the joint recommendations by the Special Envoys on Acid Rain, Drew Lewis of the United States and William Davis of Canada; and the cooperation between the U.S. and Canada in addressing the Clean Coal and Acid Rain issues.

****

Unfair global competition would result from further U.S. Government funding of foreign technology when (1) similar technology is available from U.S. companies, or (2) foreign government funds are not available to U.S. companies for the advancement of power generation technology, or (3) the home market of a foreign company is closed to U.S. manufacturers.

DOE should solicit the views of the U.S. Department of Commerce and the U.S. Trade Representative before providing more federal CCT funds to foreign entities.

****

The U.S. cannot seek cooperative ventures with foreign countries in the development, use and export of U.S. coal and related technologies and simultaneously limit participation of foreign companies in the clean coal program.

Much of the world's technology development is being undertaken by both U.S. and foreign international companies and any U.S. policy which fails to recognize this fact or biases the clean coal program against such participation is ill-advised. Those technology innovations, which may be most readily acceptable to users in the U.S., could be stymied by any government policy and/or bias that limits foreign participation.

****

The use of foreign technology should not be excluded. In one manner or another, most CFBC technologies are controlled by foreign firms even though many have U.S. subsidiaries and U.S. testing facilities.

****

The major equipment market is now an international market. Restriction of that market could remove a number of viable concepts or vendors from a menu of possible options.

DOE should be able to select projects in Round IV of CCT which are similar to projects selected in the first three rounds ... this may be necessary to help deploy some technologies.

****

The marketplace for emissions reduction technology is supplied internationally. To add restrictions would be detrimental to the CCT program, the utility industry, the coal industry, and the majority of suppliers of power generation and pollution control systems. In addition, drawing such distinctions could be very difficult given the complicated inter-relationships of U.S. and foreign companies and technology.

Carbon Dioxide Emissions and Global Warming

It is premature, and would be a mistake and a waste of public funds, for DOE to address any energy technology to reduce CO2 emissions at this time. There is considerable controversy as to whether global warming, or global cooling, is taking place and what options are preferable, if any, to regulate global climate.

****

Considering the uncertainties surrounding the scientific evidence supporting the global warming hypothesis, it is recommended that no greenhouse gas emission restrictions be placed upon CCT-IV projects.

Intellectual Property Rights

The private sector is required to provide at least 50% of the funding while taking on the technical and financial risks of the project. DOE's current policy of publication of project data denies the private sector risk taker the normal advantage of protection of legitimate intellectual properties normally available on commercial projects. Publication makes it too easy for the non-risk takers to gain the knowledge generated in the Demonstration Projects at little cost.

The participant, under the Clean Coal Cooperative Agreement, should have the right to withhold data generated under the Demonstration Program from publication for a period of five years after completion of the demonstration phase.

****

Considering the investment required by industrial contractors, which may take considerable time to recover in future commercial business, these firms should have some "exclusive use of technical data generated" for a limited period of time. This is particularly important for small firms with limited capitalization.

Focus of CCT-IV

The following research topics should be included in the fourth CCT solicitation: (1) major developed coal resources in the southern Appalachians, (2) underdeveloped coal resources in the southern Appalachians and the Gulf Coast, and (3) comparative coal petrology and petrography including rank distinction, vitrinite reflectance, maceral composition, and coal quality geochemistry.

Pending and future CCT proposals should address applications to these resources and include the following:

1. Advanced Combustion Technologies, such as sorbent blending.

2. Fluidized-bed combustion using lignite and associated sorbents to reduce sulfur emissions, slagging, and fouling in boilers.

3. Low-rank coal drying to increase calorific values.

4. Lignite-bituminous coal blending in the Advanced Coal Liquefaction Process.

5. Chemical feedstock from gasification.

6. High-temperature waste treatment technologies.

****

Clean coal technology should be broadly applicable to retrofits and repowering as well as new fuel forms, grass roots or mine mouth demonstrations. This will provide opportunities for demonstration of the truly innovative, environmentally effective, and economically attractive technologies for the future.

****

While future rounds of the program should not preclude the demonstration of technologies not demonstrated in Rounds I through III, the focus of Rounds IV and V should emphasize deployment, and industry -- by the proposals made -- should determine which technologies should be deployed.

Without federal involvement in the deployment of successfully demonstrated projects (particularly in light of possible acid rain abatement controls) it is not likely that the utility industry will be able to reliably utilize these technologies in the time frame when they will be needed.

Unless future solicitations of the clean coal program allow for, and focus upon, replicating near-commercial technologies, these technologies -- in which the private sector and the Federal Government have invested enormous amounts of capital -- may be "moth-balled."

Rounds IV and V should not be limited solely to deployment projects because promising bench-scale technologies may then be overlooked. Also, the program should seek to demonstrate as diverse a base of technologies as possible.

****

The solicitation should provide credit to projects that provide significant potential for providing future energy needs, not only electric power, but transportation fuels produced in conjunction with electric power.

The solicitation should not exclude the use of a technology already demonstrated on a range of coals if the developer is proposing to utilize that technology with coal in combination with other fuels. The percentage of coal in the fuel mix should be flexible.

****

Provide for power plant replacement in addition to retrofit and repower. Allowing for replacement provides the opportunity to match the MCFC to the existing station rating and, as required, add MCFC modules to satisfy regional load growth requirements. Replacement as

defined in the Congressional Conference FY90 Appropriations Bill is "the complete replacement of an existing facility."

Allow flexibility in rating size of the power plant being replaced. Published electric utility information shows the single 250-MW turbine rating to be inconsistent with the average size of 30 to 40 year old candidate replacement units. The CCT-IV solicitation should approach repowering or replacement on a per unit basis and provide for smaller steam turbine ratings. To be consistent, DOE should provide reference plants at various ratings to establish comparative criteria.

****

The new fuel forms category concept should be retained for Round IV and subsequent solicitations and should be broadly defined. This has the potential of encouraging coal utilization in services where it is not currently used or is being pushed out of the market by environmental concerns, and in the use of coal in novel ways that may facilitate the use of materials presently considered wastes.

****

Repayment

Industry participants should not be required to repay the federal cost-share in Rounds IV and V as they have been under the first three rounds of the program.

The issue of whether industry should repay the federal portion of project costs has been the most contentious issue thus far in the program; it has had a chilling effect on industry participation, particularly with respect to the utility industry and it has caused serious impediments to the expeditious and successful completion of industry/government negotiations.

Implementation of an acid rain control program will be extremely costly to the utility industry and could deplete

funds that might otherwise be used by industry to develop clean coal technologies; scarcity of private sector funds, coupled with a requirement to repay any federal funds made available, could prove devastating to the program.

****

Repayment of government financial support should be premised upon the subsequent profit derived from any commercial venture which stems from the CCT project. Otherwise, repayment is not justified considering the risk of the ventures.

State Incentives

Projects proposed to be located in states that provide financial and/or regulatory incentives -- or otherwise evidence encouragement of clean coal technologies -- should be given a preference in selection in Rounds IV and V. Providing such a preference in selection would greatly encourage states to enact regulatory or financial incentives or provide other evidence of state support for the use of clean coal technologies.

If a federal acid rain control program is put into place, the federal funding available through the clean coal program may not provide adequate incentives to assure that industry moves forward with the development of clean coal technologies. If states provide incentives for the use of clean coal technologies, there is greater assurance that these technologies will actually be put into commercial use.

National Laboratory Participation

Previous CCT PONs have not explicitly addressed the eligibility of national laboratories to participate in groups responding to the solicitations. The cost sharing provisions of the program preclude a national laboratory being a sole respondent, but provide little guidance regarding laboratory participation in joint proposals. Public policy, as evidenced by the Stevenson-Wydler Act, the Bayh-Dole Act and the pending Dominici Bill, supports a positive and active role for national laboratories in the clean coal technology program.

Personal services provided by a national laboratory could be handled in a straight forward manner under the existing work-for-others authorities granted the laboratories with the laboratory acting in the capacity of a subcontractor to the proposing entity. Alternatively, such services could be configured as part of the government contributions to a project. The present DOE requirement of approval prior to the submission of a proposal should either be waived or reduced to the requirement of a notice of intent to participate to avoid the time constraints of the solicitation cycle and to avoid the possible premature release of competitively sensitive information of the private parties of a responding group.

Participation of a national laboratory in a group responding to these solicitations does not necessarily entail any greater risk of conflict than does the participation, in a response, of other parties that also have pre-existing contractual relationships with the Department.

APPENDIX

ORGANIZATIONS REPRESENTED AT THE PUBLIC MEETINGS

ORGANIZATIONS REPRESENTED AT THE PUBLIC MEETINGS

AMAX Research and Development Center
ARMCO, Inc.
AVCO Research Laboratory
Advanced Engineering Associates, Inc.
Advanced Fuel Research, Inc.
Allegheny Power Service Corporation
Allied Energy Systems, Inc.
Allison Gas Turbines
Amax Coal Industries
Argonne National Laboratory
Arthur D. Little, Inc.
Asea Brown Boveri, Inc.

BNI Coal, Ltd.
Babcock & Wilcox
Bechtel Corporation
Bethlehem Steel Corporation
Black & Veatch
BlazeTech Corporation
Bonneville Pacific Corporation

California Carbide Company
California Energy Commission
California Energy Markets
Cambridge Scientific, Inc.
Carbon Fuels Corp.
Chas. T. Main, Inc.
Chatterjee & Associates, Inc.
Clean Coal Technology Coalition
Clean-Coal/Synfuels Letter
Coal Quality Development Center
Coal Technology Corp.
Combustion Engineering, Inc.
Combustion Power Company, Inc.
Consolidation Coal Company
Corn Products
Council of Energy Resource Tribes

DOW Corning
Destec Energy, Inc.

Preceding Page Blank

E.I. DuPont DeNemours & Company, Inc.
EBARA Environmental Corporation
EBASCO Service
EG&T
EN-R-TECH International
EPRI
Edison Electric Institute
Energotechnology Corp.
Energy Research Corporation

Foster Wheeler Development Corp.
Foster Wheeler Energy Corp.

GE Transportation Systems
General Electric Company
Gilbert/Commonwealth, Inc.

HRI
HYDROCARB Corp.

Institute of Gas Technology
Inter-Power of New York, Inc.
International Fuel Cell Corporation

KRW Energy Systems, Inc.

Lawrence Berkeley Laboratory
Levin-Richmond Terminal Corporation

M-C Power Corporation
Minnesota Power

NEOS Corporation
National Coal Association
National Coal Council
Newbay Corporation
Northeastern University
Northern States Power Company

Occidental Oil Shale, Inc.

PSI Technology Company
Pacific Northwest Laboratory
Penelec
Public Service Electric and Gas
Pure Air
Pure Fire of Nevada, Inc.

Radian Corporation
Raycon Research & Development Company
RenCon Development Company
Riley Stoker Corporation

SAIC
SFA Pacific, Inc.
Smooth-Pore Filtration Systems, Inc.
Spire Corporation
State of Illinois
State of Rhode Island
Stone & Webster Engineering Corp.
Subcommittee on Interior and Related Agencies

TECOGEN
TRW
Tampella Keeler
Tampella Ltd., Power Industry
Tennessee Valley Authority
Texaco Inc.
The Ralph M. Parsons Co.
Thermo Electron Corporation

University of Alabama

W. J. Schafer Associates
Weirton Steel